

Bellwork: 10/1/12

$$y = mx + b$$

Write the equation of the line that goes through the points:

(6, -9) and (11, 1)
 x_1, y_1 x_2, y_2

$$m = \frac{1 + 9}{11 - 6} = \frac{10}{5} = 2$$

$$y - 1 = 2(x - 11)$$

$$y - \cancel{1} = 2x - 2\cancel{2} + \cancel{1}$$

$$\boxed{y = 2x - 21}$$

Parallel lines: lines that never intersect because they have the SAME slope.

Write the equation of the line that is parallel to $y = 6x - 2$ through $(1, -3)$.

$$m = 6$$

$$pt = (1, -3)$$

$$y + 3 = 6(x - 1)$$

$$\begin{array}{rcl} y + 3 & = & 6x - 6 \\ -3 & & -3 \end{array}$$

$$\boxed{y = 6x - 9}$$

parallel to $4x + 2y = 7$ through $(x_1, y_1) = (4, -2)$

$$m = -2$$

$$\text{pt} : (4, -2)$$

$$\frac{dy}{dx} = -\frac{4x}{2} + \frac{7}{2}$$
$$y = -2x + \frac{7}{2}$$

not answer!

$$y - y_1 = m(x - x_1) \quad \boxed{y = -2x + 6}$$

$$y + 2 = -2(x - 4)$$

$$\begin{array}{r} y + 2 = -2x + 8 \\ \underline{-2 \quad -2} \end{array}$$

parallel to $3x - 4y = 16$ through $(8; 3)$

$$m = \frac{3}{4}$$

$$\text{pt: } (8, -3)$$

$$y - y_1 = m(x - x_1) \quad \boxed{y = \frac{3}{4}x - 4}$$

$$y + 3 = \frac{3}{4}(x - 8)$$

$$y + 3 = \frac{3}{4}x - 6$$

$$\begin{array}{r} y + 3 = \frac{3}{4}x - 6 \\ \underline{-3 \qquad -6} \\ y = \frac{3}{4}x - 9 \end{array}$$

Perpendicular lines: have opposite, reciprocal slopes; intersect at 90° angles

Write the equation of the line that is
① perpendicular to $y = -4x + 7$ through $(8, 5)$

$$m_{\perp} = \frac{1}{4}$$
$$(8, 5)$$

$$y - 5 = \frac{1}{4}(x - 8)$$

$$y - 5 = \frac{1}{4}x - 2$$

$$y = \frac{1}{4}x + 3$$

⑥ Perpendicular to $y = \frac{2}{3}x - 1$ through $(0, 6)$

$$m_{\perp} = -\frac{3}{2}$$

$$(0, 6)$$

$$y - 6 = -\frac{3}{2}(x - 0)$$

$$\begin{array}{rcl} y - 6 & = & -\frac{3}{2}x \\ +6 & & +6 \end{array}$$

$$\boxed{y = -\frac{3}{2}x + 6}$$

Perpendicular to $3x - 3y = -9$
going through $(-3, -2)$

$$\begin{array}{r} 3x - 3y = -9 \\ -3x \quad -3x \\ \hline -3y = -3x - 9 \\ \frac{-3y}{-3} = \frac{-3x}{-3} - \frac{9}{-3} \\ y = x + 3 \end{array}$$

$$m_{\perp} = -1$$

$$\begin{array}{l} m = -1 \\ (-3, -2) \\ y + 2 = -1(x + 3) \\ y + 2 = -x - 3 \\ \quad -2 \qquad -2 \end{array}$$

$$\boxed{y = -x - 5}$$

Equations of lines from a table:

Determine if the table represents a linear function.
If so, write the equation of the line it represents.

(a)

x	y
-5	0
-3	1
-1	2
1	4
3	8
5	16

How do you know
if a table is
linear?

⑥

x	y
-6	9
-4	8
-2	7
0	6
2	5

⑦

x	y
-16	2
-12	5
-8	8
-4	11

